

REMARKS

All the claims 1 to 15 have been cancelled and a new set of claims 16 to 22 has been substituted which are believed to more clearly and succinctly define the present invention in a manner which conforms precisely with the requirements of 35 USC 102, second paragraph, and which clearly and patentably distinguish the invention over the applied references of record, whether considered alone or in combination..

For example, new claim 16, from which all the remaining claims 17 to 22 depend, directly or indirectly, emphasize that feature of the present milling system considered patentable. In accordance with new claim 16, a whipstock casing milling system is defined of the type wherein the milling elements of the window mill are engaged with and deflected by a first ramp surface 45 which is relatively steep compared to a second ramp surface 46 which meets the first ramp surface at a juncture A. This is in contrast to the Braddick system (U.S. 5,551,509) wherein a non-cutting tapered nose piece on the leading end of the window mill engages a protrusion on the whipface so that the milling elements of the window mill are maintained spaced from the steep ramp surface. It will be seen that the milling elements of this prior art system do not engage with and are not deflected by a relatively steep ramp surface as in the invention.

In the present system, as clearly set forth in the new claims, the fact that the milling elements of the window mill engage with and are deflected by the relatively steep ramp surface 45 (now in the interest of clarity defined as a first ramp surface) results in a tendency for the relatively steep ramp surface to be undesirably milled away. To

overcome this problem, the system as defined in claim 16 is provided with a protrusion or extension B which effectively extends the relatively steep ramp surface. However, the length of the extension is such that, as the mill moves along the extension, it increasingly projects beyond the extension so that the area of contact between the mill and the deflected surface of the whipface is reduced. Thus, while the mill remains in contact with the relatively steep ramp surface 45, *i.e.*, the first ramp surface, the extension provides sufficient support to prevent ramp surface 45 from being milled. However, once the mill has moved sufficiently far along the deflecting surface to no longer be in contact with ramp surface 45, the area of contact between the mill and the deflecting surface has reduced to such an extent that the increased stresses in the extension (caused by the reduced contact area) allows protrusion B to be milled. As a result, mill 32 may follow the deflection path dictated by surface 46 which is now defined as the second ramp or parallel surface.

The prior art does not disclose a system wherein the contact between the mill and the deflecting surface is carefully controlled, as in the present invention, in order to protect the relatively steep (first) ramp surface. The advantage of the presently defined system is that, once the mill has opened a window in the casing, milling may be continued without a need to immediately replace the mill. It will be seen with reference to the aforementioned prior art document that, when a tapered nose piece is used, the mill becomes jammed between the casing and the whipface once the casing window has been opened (see Fig. 7) and accordingly the mill must be retrieved and replaced in

order for milling to continue. As a result of the present invention, a system may be used without the tapered nose piece (so that milling may continue after the milling case has been opened) and, advantageously, without damage to the relatively steep ramp surface. The whipface may therefore be subsequently provided with a replacement protrusion B and re-used.

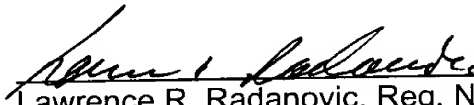
Neither of the auxiliary references, Swearington et al. (U.S. 5,816,324) or Lee et al. (U.S. 5,826,651) discloses or fairly suggests to one of ordinary skill in the art to supply the deficiencies noted in the Braddick disclosure in the foregoing detailed discussion of the invention and in the discussion of the prior art as represented by Braddick. It is therefore believed that the new claims patentably distinguish the invention over the art of record whether considered alone or in combination.

Concerning the drawing objections, enclosed are sheets 1 and 2 as marked in red showing in sheet 1 the PRIOR ART legends for Figs. 1 to 4, and showing in Figs. 5 to 8 a screw fastener 40 to illustrate support for that appearing in dependent claims 19 and 20. The specification has therefore been amended on page 5, and it should be pointed out that no new matter is thereby introduced by the illustration of fastener 40 given that page 5 of the original specification describes protrusion B as capable of being secured to the whipface by any convenient means, such as by screws, and the last three lines on page 2 of the original specification describes the protrusion as removably secured to the whipface as by means of at least one threaded fastener. No new matter

is thereby introduced as a result of the proposed drawing corrections. It is therefore respectfully requested that the drawings as proposed to be amended be entered.

Allowance of all the new claims 16 to 22 is earnestly solicited.

Respectfully submitted,


Lawrence R. Radanovic, Reg. No. 23,077
DYKEMA GOSSETT PLLC
1300 I STREET, NW, SUITE 300 WEST
WASHINGTON, DC 20005
202 906-8624

Attorney for Applicants